

Lesson preparation book for the first year of middle school, the first semester
Prepared and designed by: Mahmoud Yassin El Shafei

The general objectives of teaching the computer and information technology book for the first year of middle school.

- Know the concepts, processes and infrastructure of a computer system (software – hardware – network)
- Using technological production tools to support and develop his learning.
- Producing some applied projects (creative art painting) using technological processes, programs and tools.
- Employing technological communication tools in exchanging content and visions with others.
- The use of technological sources in dealing with electronic information.
- Using technological sources to process and evaluate data and prepare results reports.

The specific objectives of teaching the computer and information technology book for the first year of middle school.

- Recognize computer related concepts and terms.
- Explain the elements of a computer system.
- Deduce the relationship of input and output units with data and information.
- Exercising computer management operations and controlling its accessories.
- Classifie electronic information in special folders according to type or use.
- Recognize electronic production tools and programs .gimp
- exercise some basic operations of image processing programs.
- Employs some technological production tools in the implementation of his educational activities and the delivery of educational tasks.
- Identifie the keywords used in electronic searches through technological sources.
- Exercising searches for electronic information in all its forms (text - audio - image - video) available on computers and reliable information networks.
- Use reliable electronic sources.
- Employing the Egyptian Knowledge Bank in carrying out educational tasks.

Distribution of computer and information technology content for the first year of middle school, first semester of the year 20 /20

Week	Topic	Accompanying Activities
1	Computer basics: <ul style="list-style-type: none"> • Computer definition. • Computer stages. • components of a computer system. • Hardware (hardware components). 	<ul style="list-style-type: none"> • Defines computer functions in different areas of life. • Defines the difference between the concepts of data and information. • List the components of a computer system. • Classifies the units of input, output and storage. • Differentiate between storage units.
2	Computer System Basics Supplement: <ul style="list-style-type: none"> • hardware supplement • software • The human element 	<ul style="list-style-type: none"> • Describes the components of the processor. • Differentiate between types of memory. • Distinguish between different types of software. • Arranges storage units according to storage capacity. • Classifies the tasks of the human element.
3	operating system	<ul style="list-style-type: none"> • Explain the concept of an operating system. • Multiple functions of the operating system. • Classify operating systems (closed source - open source)
4	Operating system graphic interface.	<ul style="list-style-type: none"> • Work with different operating systems installed on the device. • Describes the basic elements of a graphical operating system interface. • Adjust operating system settings.
5	Dealing with files and folders.	<ul style="list-style-type: none"> • Explains the concept of files and their types. • Creates a file and saves it. • Differentiate between the command Save and Save As. • Recognizes multiple ways to search for files. • Differentiate between the concept of files and folders and create folders. • Uses the shortcut menu to create folders. • Performs operations (rename, delete, recycle)

		<ul style="list-style-type: none"> • applies copy and cut operations.
6	computer networks	<ul style="list-style-type: none"> • Explain the concept of a computer network. • Understand the importance of a computer network. • List the features of a computer network. • Recognize the types of networks. • Shares folders and files.
7	Image modifying program (lesson 1)	<ul style="list-style-type: none"> • Deals with one of the programs for creating and modifying images. • Use The assistant to familiarize himself with the interface components of an image creation and editing program. • Mastering the skill of selection.
8	Image modifying program (lesson 2)	<ul style="list-style-type: none"> • Creates a new image file • Creates simple graphics using selection tools.
9	Image modifying program (lesson 3)	<ul style="list-style-type: none"> • Draws various shapes using drawing tools. • Manipulate images using drawing tools.
10	Image modifying program (lesson 4)	<ul style="list-style-type: none"> • Changes the image format (transfer - scaling - reflection..)
11	Image modifying program (lesson 5)	<ul style="list-style-type: none"> • Using the concept of layers in designing an art board.
12	Image modifying program (lesson 6)	<ul style="list-style-type: none"> • Adds improvements to the appearance of the image with filters
13	Image modifying program (lesson 7)	<ul style="list-style-type: none"> • Distinguish between raster and vector images. • Differentiate between different image styles. • Add text to image layers. • Saves the image file with different extensions.
14	The project	<ul style="list-style-type: none"> • Designs a graphic board using the various concepts and skills of the program.
15	General Review	
16	practical test	

Date				Lesson (1) Computer Basics (1)	strategy
Class					brainstorming dialogue and discussion.
Period					
By the end of the lesson the student will be able to: <ul style="list-style-type: none">Determine the functions of the computer in the areas of life.differentiate between the concepts of data and information.List the elements of a computer systemClassify the units of input, output and storageDifferentiate between storage units.					"Preface" What kind of computer did you come across in your life and was it used for what purpose?

Accompanying activities

Take the students to the computer room and ask them the introductory question and ask them to brainstorm and discuss the answers they provide, evidenced by a presentation explaining the elements of the lesson using the textbook.

View Lesson

computer:

It is an electronic device that stores (data) and processes it to reach specific results (information) by performing arithmetic and logical operations.

Basic elements of a computer system:

1. Data and information
2. Hardware
3. Software
4. The human element

Information	Data
It is the data that has been processed, classified and organized so that it has meaning to achieve a specific goal	A set of facts that can be obtained by observation or observation in the form of pictures or texts
Input units	Output units
they are the devices responsible for entering the various data of the device.	they are the devices responsible for displaying and outputting information that the computer has processed and executed.

Storage Devices : It is used to store data and information and can be retrieved at any time according to the needs of the user. It does not lose its contents due to power outages.

Evaluation

One From the input units is

Date				Lesson (2) Computer Basics (2)	strategy
Class					brainstorming
Period					dialogue and discussion.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">Describe the components of the processorDifferentiate between types of memoryDistinguish between different types of softwareSort storage units by capacityClassify the tasks of the human element					"Preface" What is the memory capacity of your mobile phone and what is the name of the unit of measurement for the capacity associated with it?

Accompanying activities

Take the students to the computer room and ask them the introductory question and ask them to brainstorm and discuss the answers they provide, evidenced by a presentation explaining the elements of the lesson using the textbook.

View Lesson

System Unit:

It is the basic physical component of a computer, and its most important components are: (Main memory - CPU - Motherboard)

Main memory is divided into two types:

(Random Access Memory - A dedicated read-only memory (ROM))

The CPU is divided into two parts:

ALU (Arithmetic and Logic Unit - Control Unit)

Storage capacity measurement units:

(bit - Byte - KiloByte - MegaByte - GigaByte - TeraByte)

Software :

(operating systems - service software - programming languages - applications)

Open and closed source software

Types of software in terms of copyright

- Freeware
- Shareware
- Software that is not authorized to be used except by purchasing the original copy.

The human element :

(systems analyst - designer - programmer - user)

Evaluation

Compare between open and closed source programs.

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Date				Lesson (3) operating systems	strategy
Class					brainstorming
Period					dialogue and discussion.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">Mention the concept of operating systemMultiple functions of the operating systemClassifiy operating systems (closed source - open source)					"Preface" What is the name of the operating system your computer is running on? What is the difference between it and the phone operating system?

Accompanying activities

Take the students to the computer room and ask them the introductory question and ask them to brainstorm and discuss the answers they provide, evidenced by a presentation explaining the elements of the lesson using the textbook.

View Lesson

Operating system definition:

The operating system is a set of programs responsible for managing the physical resources of a computer, and it is considered as an intermediary between the user and his programs on the one hand, and the hardware components (hardware) on the other hand.

command prompt:

The user directs commands and instructions to the operating system written from the prompt using the keyboard

Operating system functions:

- Control of storage units and devices attached to the computer.
- Organizing software dealing with memory.
- Transferring data between the different units of the device and saving it to the storage units.
- Security (password - different user permissions).
- Provides an interface for the user, through which the user can deal with the device.

Open source operating systems	Closed source operating systems
Linux Operating System: It is an open source scalable operating system that is easy to use. There are many distributions, the most famous of which are Fedora, Ubuntu	Mac OS X: It is mainly intended for Apple Macintosh devices. The Windows operating system is one of the most popular and widely used operating systems for personal devices.

Mobile operating systems : There are open source and closed source operating systems, and one of the most popular operating systems in android mobile phones is not limited to mobile phones, as it can be used on tablets.

Evaluation

One of the most important functions of the operating system i

Date				Lesson (4) Graphical Operating Systems Interface	strategy
Class					cooperative education
Period					practical application
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• download one of the operating systems on the computer.• Explain the basic elements of the operating system's graphic interface.• Adjust the operating system settings.					"Preface" What are the advantages of the graphical interface of the operating system?

Accompanying activities

Take the students to the computer room and divide them into groups and ask each group to make a list of the answers to the introductory question and present it to the other groups and ask them to open the devices and explain the most important components of the desktop screen, explaining to them the main elements of the lesson in a practical way.

View Lesson

GUI Features:

- Show programs in the form of regular windows.
- Use of simple drop-down menus and toolbars.

The main components of the opening screen:

Background: A color or image that can be changed by the user.

Icons: Small icons used to quickly launch programs by simply clicking on them

Bars: shows a set of icons (icons) for the software installed on the operating system and other related to some important settings of the system such as setting the date and time, sound control and network.

Important note:

A computer can contain more than one operating system, but at startup, one of these systems is selected to be loaded.

Evaluation

Explain the most important features of the GUI interface.

Date				Lesson (5) Handling files and folders (1)	strategy
Class					Dialogue and discussion
Period					cooperative education
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Explain the concept of files and their types.• Create a file and saves it.• differentiate between the command to save and save as.• Recognize the various ways to search for files• differentiate between the concepts of files and folders.					"Preface" What types of files have you dealt with on the computer and what is the difference between a file and a folder?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question. Ask each group to make a list of the answers to the introductory question and present it to the other groups. Show them a presentation that explains the main elements of the lesson with practical application on the computer.

View Lesson

File:

It is a set of data that is stored within storage media with different extensions and types, and the user can deal with it, whether by retrieving, modifying, deleting, sharing, printing, etc. Each file has its own extension that distinguishes it.

File types:

- 1 - video files 2 - photo files
- 3 - Text files 4 - System files

Create a file: Run the word programs and type one of the text phrases.

Save the file: Open the File menu and choose the save as command. From the dialog box, type the file name and the location to save it.

The difference between the save and save as command:

there is no difference between them in the case of saving for the first time, but the save command is used when you want to modify the file and save it with the same name, while the save as command is used when you want to save a file with a new name or a different extension after modifying it.

Methods for searching for files:

The search bar can be shown by pressing the ctrl + f buttons on the keyboard.

- 1 - Search by name.
- 2 - Search using the extension .

The difference between a file and a folder:

A folder can contain more than one file and vice versa.

Evaluation

What is the difference between the save and save as command?

Dte				Lesson (6) Handling files and folders (2)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Use the shortcut menu to create folders.• Perform operations (renaming - deleting - restoring)• apply the processes of copying and cutting.					"Preface" What are the branches of the New command in the shortcut menu?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to make a list of the answers to the introductory question and present it to the other groups and offer them a practical presentation that explains the main elements of the lesson with practical application on the computer.

View Lesson

Folder:

It is a place inside the storage media that contains a file or a group of files, and sometimes it contains a folder or other folders called subfolders.

Steps to create a folder:

Direct the mouse pointer to the place where you want to create the folder and press the right mouse button to open the shortcut menu and choose New - folder from it, then write an appropriate name for the folder. You can also use the shortcut ctrl+shift+N

Cut the folder: that is, move the folder from its current location to another new location by clicking on it with the right mouse button and choosing cut, then going to the place where the folder is to be moved and choosing past.

Copying the folder: that is, making a duplicate copy in another new place by clicking on it with the right mouse button and choosing copy, then go to the desired place to copy the folder to and choose past.

Rename a folder: Using the shortcut menu, we press the Rename command and type the new name.

Delete the folder: using the delete button or the move to trash command from the shortcut menu.

restore deleted files: move to the trash folder or recycle bin, the deleted files and folders appear. You can choose to restore or delete permanently from the shortcut menu.

Evaluation

What is the difference between the cut command and the copy command?

Date				Lesson (7) computer networks	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to:					"Preface"
<ul style="list-style-type: none">• Explain the concept of a computer network.• Recognize the importance of having a computer network.• List the advantages of computer networks.• Recognize the types of networks.• Share files and folders.					What are computer networks? How can you share your files with your colleagues?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to discuss what they have achieved and present it to the other groups and show them a presentation on networks with the practical application of sharing files and folders.

View Lesson

Computer network: It is the connection of two or more devices through a wired or wireless communication medium in order to share resources (data and devices).

Internet features:

- 1 - The possibility of exchanging data and programs between devices.
- 2 - Participation in the physical components.
- 3 - Data centralization.

Types of networks in terms of range:

WAN(WIDE AREA NETWORK)	LAN(LOCAL AREA NETWORK)
It is used to connect devices separated by great distances, such as cities, countries or continents. The Internet is a special type of wide-area network.	A network of limited space, i.e. inside a building or several buildings, and is used in small institutions, schools, universities, or inside the house

File sharing:

It is the process of publishing digitally stored information (audio, video, images, documents) and making it accessible through a computer network. Hardware components such as a printer can also be shared.

Sharing files in Windows: See the book page 68

Sharing files in the Fedora operating system: see the book pg 75

Evaluation

What is the difference between lan and wan networks?

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Date				Lesson (8) image processing software (1)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">Deal with one of the programs for creating and processing images.use The assistant to identify the interface components of gimpexercise some selection tools.					"Preface" What are the image processing programs? And how can these programs be used?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to discuss what they have achieved and present it to the other groups and offer them a practical presentation about the GIMP program and its main interface components.

View Lesson

Image processing software:

Programs used to help create and modify images and various designs, the most important of which is GIMP

The GIMP interface is available in two forms:

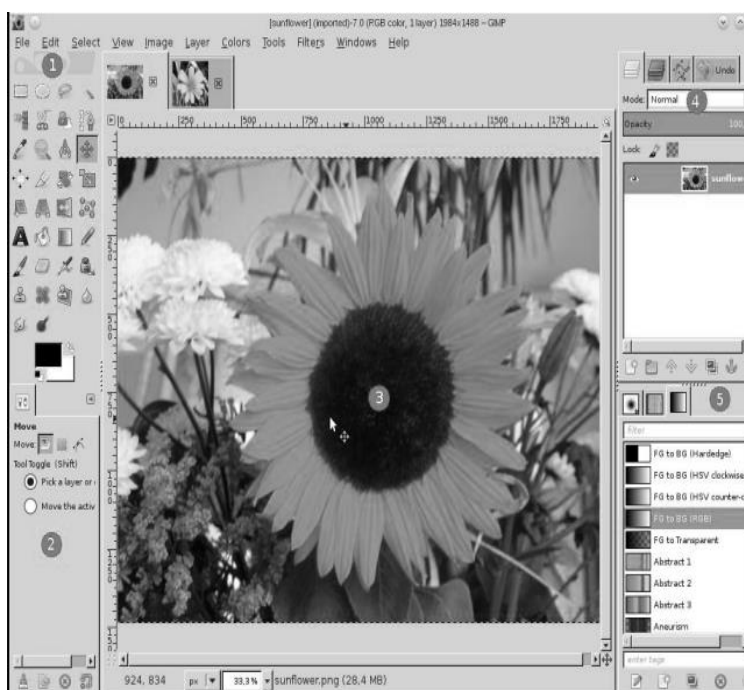
- multi window mode
- single window mode

Gimp interface components:

- 1 - Tool Box
- 2 - Tool option dock
- 3 - Image windows
- 4 - (Layers, Channels, Paths, Undo) Box
- 5 - (Brushes, Patterns, Gradients) Box

Selection Tools:

- 1 - Rectangle Tool
- 2 - Ellipse Select Tool
- 3 -Free Select (Lasso) tool
- 4 - Fuzzy Selection (Magic Wand) tool
- 5 - Intelligent Scissors



Evaluation

Intelligent Scissors is used to select

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Date				Lesson (9) image processing software (2)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Create a new image file.• Design simple graphics using selection tools.• Save the image file and all information about it using the save . command					"Preface" How can the selection tools be used to create a new image?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to discuss what they have reached and present it to the other groups and offer them a practical activity on how to create an image with selection tools and how to save it and ask them to apply it and then choose the best projects presented.

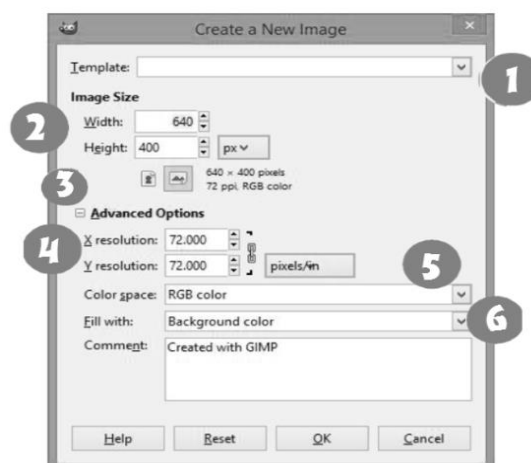
View Lesson

Create a new image file:

To create a new image file, from the File menu, we choose the New command, and from the dialog box, we choose the image dimensions and rotation. You can also choose a pre-made template of different sizes from the Template selection instead of choosing manually.

The most important components of the dialog box to create the image:

- 1 - Templates
- 2 - Dimensions of the image(Image size)
- 3 - advanced option
- 4 - Resolution
- 5 - color space
- 6 - Fill color.



Designing Simple Graphics Using Selection Tools: Activities (1/2/3/4/5)

save image :

To save the image, we choose the save command from the file menu, where Gimp gives the XCF extension for the image file, and this extension is useful in the case of reopening and modifying the image file.

Evaluation

GIMP saves images with the extension

Date				Lesson (10) image processing software (3)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Draw various shapes using drawing tools.• Copy part of the image on the same layer.• Process the image using drawing tools.					"Preface" What are the drawing tools? And how can it be used?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to open the program and present what they have achieved and present it to the other groups and show them a practical demonstration of how to use the different drawing tools and ask them to implement the practical lesson activities and we choose the best designs.

View Lesson

paint tools:

paint tools are used for different purposes, such as freehand drawing, color gradation, mixing colors, or copying part of the image to another place. It can be accessed from the Tools menu or through the Tool Box.

Pencil Tool:

It is used for free hand drawing through many types of brushes that appear in the tool options.

Blend Tool:

A tool used to make a color gradient using the foreground color or the background color, and the options for that tool are modified to obtain the desired color gradient.



Smudge Tool:

Used to blend the current color with the surrounding colors in the area where you move the tool.

Clone Tool:

It is used to copy a part of the image elsewhere in the same layer and is used to modify and repair images.

Evaluation

The pencil tool is used for

Date				Lesson (11) image processing software (4)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Change the image format (transfer, scaling, reflection)• rotate the image.• Change the area of the image.					"Preface" What are the transfer and sizing tools? And how can it be used?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to open the program and present what they have achieved and present it to the other groups and show them a practical demonstration of how to use the transfer and sizing tools and ask them to implement the practical lesson activities and we choose the best designs.

View Lesson

Transform Tools:

The moving and scaling tools are used to change the image format by moving and scaling, and changing the image dimensions. It can be accessed through the Tools menu or through the toolbox.

Move Tool:

Used to move the image, image layers, selection, or text.

Crop Tool:

It is used to cut a part of the image.

Rotate Tool:

It is used to rotate the image.

Flip Tool:

It is used to make a vertical or horizontal reflection of the image.

Scale Tool:

It is used to change the area of the image (height and width).



Evaluation

The Scale Tool is used for

Date				Lesson (12) image processing software (5)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Use the concept of layers in the design of an artistic painting.• Insert text over the image.• Export the image file with an appropriate extension.					"Preface" What are the layers of the image? And how can it be used?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to open the program and show what they have achieved and present it to the other groups and show them a practical demonstration of how to use image layers in designing a painting and ask them to implement the practical lesson activities and we choose the best designs.

View Lesson

Image Layers:

The Layers tab is used to modify, add, and control the layers of the image. Image layers can be thought of as slices that are placed on top of each other without the modifications affecting each layer on the other, and are represented below the image background layer.

Dealing with image layers: to access the Layers tab through (the program interface / or from the menus windows - Dockable Dialogs - layers).

Layers tab components:

- 1 - Layer visibility to make the layer visible.
- 2 - Layer thumbnail A thumbnail of the layer and the name of the layer appears next to it.
- 3 - New layer to add a new layer.
- 4 - Raise layer to move the layer to a higher level.
- 5 - Lower layer To move the layer to a lower level.
- 6 - Duplicate layer to copy the current layer.
- 7 - Delete layer to delete the current layer.

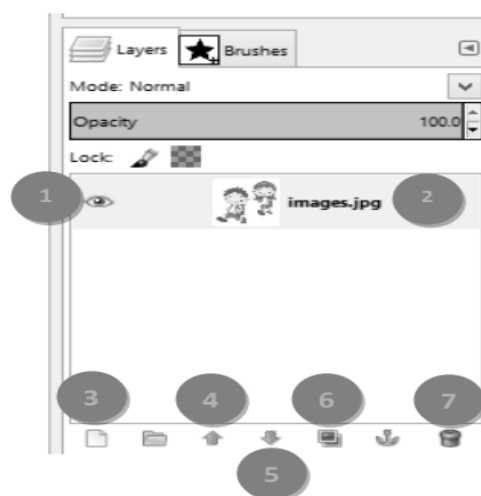
Text Tool: The text is inserted into a new layer automatically, and the layer is named with words from the beginning of the written text.

Export the drawing to a file with a suitable extension: To export the drawing with the extension (gif, jpg,...), follow the following steps:

- 1 - Ensure that all layers are visible
- 2 - Merge all layers to become one layer by choosing flatten image
- 3 - From the File menu, choose Export, select the appropriate file extension and file name.

Evaluation

To export the image, we choose the Export command from the menu.



Date				Lesson (13) image processing software (6)	strategy
Class					cooperative education
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Recognize the concept of Filters.• Recognize the use of some Filters.• Change the appearance of the image by using one of the filters.					"Preface" What are filters? And how can it be used?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to open the program and show what they have achieved and present it to the other groups and show them a practical demonstration of how to use the Filters to change the appearance of an image and ask them to implement the practical lesson activities and we choose the best designs.

View Lesson

Modifying the appearance of images using Filters:

Filters are used to help modify the appearance of the image, and to use the filter from the "Filters" menu, then choose the appropriate filter.

1. **Blur filter**: used to blur and darken the image.
2. **Emboss filter**: It is used to create an outstanding gray effect on the image.
3. **Page curle filter**: It is used to create a curl effect on the edge of the image.
4. **Supernova filter**: used to make a star flash in the image.
5. **Film filter**: It is used to create a film strip effect on the edges of the image.
6. **Weave filter**: It is used to create a texture effect on the image.
7. **Old photo filter**: used to create an effect that the photo is old.
8. **Map Object Filter**: It is used to make the image in the form of a cube or cylindrical.

Evaluation

The filter is used to help modify the appearance of the image ()

Date				Lesson (14) image processing software (7)	strategy
Class					dialogue and discussion
Period					practical application.
By the end of the lesson the student will be able to: <ul style="list-style-type: none">• Differentiat between bitmap images and vector images.• Distinguish between the color mode patterns of the image.• process an images by modification in its color mode.• Export the image file with an appropriate extension					"Preface" Why does pixelation occur in images when enlarged?

Accompanying activities

Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group and present what they have reached and present it to the other groups and show them groups of raster and vector images to show the difference between them and discuss them in it to reach the lesson elements and the way to modify the color patterns.

View Lesson

Raster Image:

It consists of adjacent points (Pixels), and each image contains rows and columns of (Pixels), and the more of them, the greater the clarity of the image . it has a large storage space and its quality and clarity change from zooming in and out.

vector image:

It is characterized by no change in image quality and clarity when enlarged or reduced, and it is characterized by its small storage space.

Image mode or color status:

There are three color modes for the image through the Mode command in the Image menu, which are:

- 1 – RGB mode
- 2 - Grayscale mode
- 3 – Indexed mode

Export the image file:

In order for other programs to read the image file, it must be exported through the Export command from the File menu, where the appropriate image file extension is chosen, such as (JPEG – GIF – PNG...)

Evaluation

What is the difference between raster and vector images?

Date				Lesson (15) The project	strategy
Class					project-based learning.
Period					
By the end of the lesson the student will be able to:					"Preface"
<ul style="list-style-type: none">• Design one of the artistic paintings.• Use some tools in the program.• Creat painting through layers.• Introduce improvements to the appearance of the painting.					After knowing and using image processing tools, how can you design and create a painting?

Accompanying activities

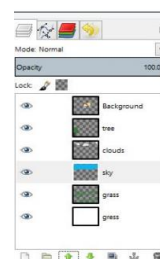
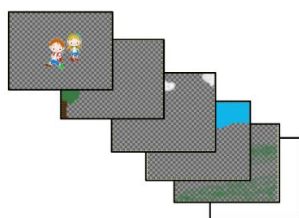
Take the students to the computer room and divide them into groups and ask them the introductory question and ask each group to design a painting as a final project within the framework of specific work steps, standards and conditions for the projects, and then choose the best projects.

View Lesson

Try designing and creating the following painting and saving it with an appropriate extension.



Layers used in painting design:



Project implementation steps. See the book, pg. (188:192).

Evaluation

Choosing the best projects with the help of students.

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